

REMARKS:

Claims 2-12, 15-17, 20-24, 40, 59 and 62-65 were previously canceled without prejudice or disclaimer. Claims 1, 13, 14, 18, 19, 25-39, 41-58, 60, 61 and 66-71 are currently pending, with claims 1, 18, 19 and 42 being independent claims.

The Examiner rejected claims 1, 13, 14, 18, 19, 29-33, 36, 38, 41-43, 48-52, 55, 57, 60, 61 and 66-71 under 35 U.S.C. §103(a) as being unpatentable over *Li et al.* (U.S. Patent Application Publication No. 2002/0015437, referred to herein as "*Li*") in view of *Zhang et al.* ("Reduced-State MIMO Sequence Estimation for EDGE Systems," Signals, Systems and Computers, 2002. Conference Record of the Thirty-Sixth Asilomar Conference, Nov. 3-6, 2002, Vol. 1, pp. 541-545, referred to herein as "*Zhang*") and *Olsson et al.* (U.S. Patent Application Publication No. 2005/0111596, referred to herein as "*Olsson*"). *See pp. 2-12 of the Office Action.* The Examiner rejected claims 25-28, 34, 35, 44-47, 53 and 54 under 35 U.S.C. §103(a) as being unpatentable over *Li, Zhang and Olsson* in further view of *Onggosanusi et al.* (U.S. Patent Application Publication No. 2004/0192215, referred to herein as "*Onggosanusi*"). *See pp. 12-18 of the Office Action.* The Examiner rejected claims 37 and 56 under 35 U.S.C. §103(a) as being unpatentable over *Li, Zhang and Olsson* in further view of *Hafeez et al.* ("Interference Cancellation for EDGE via Two-User Joint Demodulation," Vehicular Technology Conference, 2003. VTC 2003-Fall.2003 IEEE 58th, publication date Oct. 6-9, 2003, Vol. 2, pp. 1025-1029, referred to herein as "*Hafeez*"). *See pp. 18-19 of the Office Action.* The Examiner rejected claims 39 and 58 under 35 U.S.C. §103(a) as being unpatentable over *Li, Zhang and Olsson* in further view of *Hafeez*. *See pp. 19-20 of the Office Action.* These rejections are respectfully disagreed with and are traversed below.

To warrant the §103(a) rejection of the pending claims, in view of all factual information, it must be determined that the claimed invention "as a whole" would have been obvious to one of ordinary skill in the art at the time the invention was made. The conclusion must be reached on the basis of the facts gleaned from the prior art. *See MPEP §2142.*

"All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970). If an independent claim is nonobvious under 35 U.S.C. §103, then any claim depending therefrom is nonobvious. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed.Cir. 1988). See MPEP §§2142, 2143.03.

Claim 1 recites:

A method, comprising:

receiving a composite wireless communication signal by a receiver;

splitting a corresponding complex composite base band received signal into an inphase domain portion and a quadrature domain portion; and

performing, on the split corresponding complex composite base band received signal, **joint signal detection separately in inphase domain and quadrature domain**, where the joint signal detection comprises performing pre-filtering and reduced state sequence estimation **separately on the inphase domain portion and the quadrature domain portion**, where the composite wireless communication signal comprises a desired signal and an interfering signal, where the joint signal detection operates to suppress interference from the interfering signal.

As recited in amended claim 1, the corresponding complex composite base band received signal is split into an inphase (I) domain portion and a quadrature (Q) domain portion. A non-limiting example of this process is described in the specification at least at pages 8-9, paragraphs [0035]-[0047]. As further recited in amended claim 1, joint signal detection is performed on the split corresponding complex composite base band received signal **separately** in inphase domain and quadrature domain. The joint signal detection includes performing pre-filtering and reduced state sequence estimation **separately** on the inphase domain portion and the quadrature domain portion of the split corresponding complex composite base band received signal. As an example, and as noted in the specification, for example, at paragraphs [0014] and [0027], these operations enable a receiver to utilize a single antenna for reception of a MIMO signal.

It is submitted that none of the cited prior art discloses performing operations separately in inphase domain and quadrature domain.

For example, the Examiner cited *Li* as allegedly disclosing "performing, on the split corresponding complex composite base band received signal, **joint signal detection separately in inphase domain and quadrature domain**," as recited in claim 1. *See p. 3 of the Office Action*. More specifically, the Examiner identified FIG. 6 and para. [0034] of *Li*.

Paragraphs [0075] and [0076] of *Li* describe the joint-detector depicted in FIG. 6. As stated in para. [0075]:

The output of each pair of MF receivers, from the I-channel and Q-channel, is squared and summed. The maximum of the summer output is selected over a spreading symbol duration as V_1 . Similarly, V_2 and up to V_2^m are obtained in the same fashion. The select-max-and-map-to- C_1 block selects the maximum of its inputs and maps to the respective spreading sequence C_1 .

Thus, the signal detection of *Li* is performed after the outputs for the I-channel and Q-channel are squared and summed. Clearly the joint-detector disclosed by *Li* does not perform "**joint signal detection separately in inphase domain and quadrature domain**," as recited in claim 1.

As another example, the Examiner cited *Zhang* as allegedly disclosing "where the joint signal detection comprises performing pre-filtering and reduced state sequence estimation separately on the inphase domain portion and the quadrature domain portion," as recited in claim 1. *See p. 3 of the Office Action*. More specifically, the Examiner identified page 542 and FIG. 1 of *Zhang*.

On pages 3-4 of the Office Action the Examiner stated:

Zhang does not explicitly teach that the joint detection is performed in inphase and quadrature symbols. However Zhang does teach that the system is an EDGE system (page 541 right side last paragraph). It is well [known] that EDGE signals comprise an I and Q portion. It would be obvious to perform the pre-filtering and estimation on both I and Q portions of the received signal.

The Examiner failed to accord patentable weight to the language: "**separately on the inphase domain portion and the quadrature domain portion**," as recited in claim 1. That is, while *Zhang* may disclose pre-filtering and reduced state sequence estimation, *Zhang* does not disclose or suggest performing such operations "**separately on the inphase domain portion and the quadrature domain portion**," and the Examiner admitted as much. Furthermore, regardless of whether or not "[i]t would be obvious to perform the pre-filtering and estimation on **both** I and Q portions of the received signal," Applicants are arguing that it would not be obvious to perform the pre-filtering and estimation **separately** on the I and Q portions of the received signal.

It is further noted that *Olsson* does not remedy the above-noted defects of *Li* and *Zhang*, nor did the Examiner argue otherwise.

The features recited in amended claim 1 are not disclosed or suggested in the cited art. *Li* in view of *Zhang* and *Olsson* certainly does not render claim 1 obvious. Therefore, claim 1 is patentable and should be allowed.

Though dependent claims 25-39 and 41 contain their own allowable subject matter, these claims should at least be allowable due to their dependence from allowable claim 1.

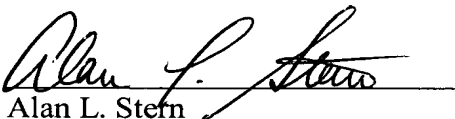
Independent claims 18, 19 and 42 claim similar features as claim 1 noted above. For the same reasons stated above with respect to claim 1, independent claims 18, 19 and 42 are not rendered obvious by any combination of *Li*, *Zhang* and *Olsson*. Therefore, claims 18, 19 and 42 are patentable and should be allowed.

Though dependent claims 13 and 61 (depending from claim 18); and dependent claims 43-58, 60 and 66-71 (depending from claim 42) contain their own allowable subject matter, these claims should at least be allowable due to their dependence from allowable independent claims 18 and 42.

The Applicants respectfully reserve the right to argue one or more of the dependent claims in response to any subsequent action, such as in responding to any further Office Action and/or in any Appeal Briefs. No admission, explicit or implicit, is made regarding the Examiner's reasoning and arguments in rejecting any of the dependent claims.

The Examiner is respectfully requested to reconsider and remove the rejections of claims 1, 13, 14, 18, 19, 25-39, 41-58, 60 and 61 under 35 U.S.C. §103(a) and to allow all of the pending claims 1, 13, 14, 18, 19, 25-39, 41-58, 60, 61 and 66-71 as now presented for examination. For all of the foregoing reasons, it is respectfully submitted that all of the claims now present in the application are clearly novel and patentable over the prior art of record. Should any unresolved issue remain, the Examiner is invited to call Applicants' agent at the telephone number indicated below.

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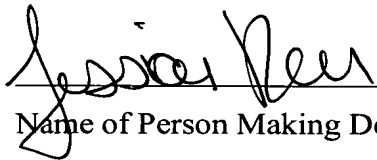
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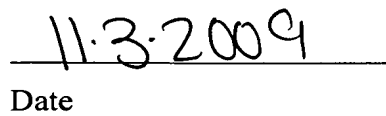
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